

IN THE CLAIMS

Please cancel claims 24-27, 40-44, 47-58, 67-76, 80-84, 86, and 93-94 without prejudice or disclaimer. Please amend claims 90 and 95 as follows:

1-16. (canceled)

17. (previously amended) A non-naturally occurring composition of matter comprising a protein complex possessing nucleic acid polymerase enhancing activity, the complex comprising a plurality of subunits wherein at least one subunit is a *P. furiosus* protein selected from at least one of:

a protein encoded by a nucleic acid having the nucleotide sequence of SEQ ID NO: 70 or a nucleic acid that hybridizes to the complement of the nucleic acid having the nucleotide sequence of SEQ ID NO: 70, wherein the hybridization conditions comprise incubation in 5x SSC and 50% formamide at 42°C, and washing in 0.1x SSC and 0.1% sodium dodecyl sulfate at 60°C; and

a protein having a sequence of amino acids comprising the amino acid sequence of SEQ ID NO:71.

18-45. (canceled)

46. (previously amended) An antibody that binds to a protein having an amino acid sequence comprising at least one of SEQ ID NO: 19 and 71.

47-58. (canceled)

59. (previously amended) A protein produced from a cell containing a DNA construct comprising a sequence encoding the amino acid sequence of SEQ ID NO: 71

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operably linked to an expression vector, wherein the protein is in monomeric, dimeric, or multimeric form.

60. (previously amended) The protein of claim 59, wherein the cell is a bacterial cell.

61. (previously amended) A polymerase-enhancing complex comprising the protein of claim 59.

62. (previously amended) An antibody that binds to the protein of claim 59.

63. (previously amended) An antibody that binds to a protein comprising the amino acid sequence of SEQ ID NO: 71, wherein the protein is part of the polymerase-enhancing complex of claim 61.

64. (previously amended) The protein of claim 59, wherein the protein is produced as a fusion protein.

65. (previously amended) The protein of claim 64, wherein the fusion protein comprises a calmodulin binding peptide.

66. (previously amended) The protein of claim 65, wherein the expression vector is pCAL-n-EK.

67-76. (canceled)

77. (previously amended) A non-naturally occurring composition of matter comprising a protein comprising the amino acid sequence of SEQ ID NO: 71.

78. (previously amended) The composition of matter of claim 77, wherein the protein is in monomeric, dimeric, or multimeric form.

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79. (previously amended) The composition of matter of claim 77, wherein the protein is present in a protein complex.

80-84. (canceled)

85. (previously amended) A protein having polymerase-enhancing factor (PEF) activity comprising the amino acid sequence of SEQ ID NO: 73.

86. (canceled)

87. (original) A PCR enhancing, protein extract comprising purified proteins from *Thermus thermophilis* that possesses dUTPase activity.

88. (original) A composition comprising a protein extract as claimed in claim 87.

89. (original) A composition comprising a protein extract as claimed in claim 87, further comprising a thermostable DNA polymerase.

90. (currently amended) A protein extract of claim 87, which comprises a protein that can be bound by an antibody specific for a recombinant Pfu P. furiosus protein comprising the amino acid sequence of SEQ ID NO: 71.

91. (original) A composition comprising a protein extract of claim 90 and a thermostable DNA polymerase.

92. (original) A protein extract of claim 90, wherein the protein possesses a molecular weight of approximately 92 kD in an SDS-PAGE gel.

93-94. (canceled)

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95. (currently amended) A non-naturally occurring composition of matter comprising a polymerase-enhancing protein encoded by a nucleic acid that hybridizes to the complement of the ~~nucleotide sequence~~ nucleic acid of SEQ ID NO: 70, wherein the hybridization conditions comprise incubation in 5x SSC and 50% formamide at 42°C, and washing in 0.1x SSC and 0.1% sodium dodecyl sulfate at 60°C overnight.

96. (canceled)

97. (original) A protein extract of claim 87, which comprises a protein that possess a molecular weight of approximately 24kD in an SDS-PAGE gel.

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